

REMARKS

In this Preliminary Amendment, Applicants have canceled Claims 1-9 and added Claims 10-34. Claims 10, 14 and 30 are Independent Claims and Claims 10-34 are pending.

Applicants have enclosed herewith a substitute specification and a marked-up copy of the original specification in order to place the specification in more typical U.S. format. Applicants respectfully request consideration and examination of the present Application and the timely allowance of the pending claims.

The Examiner is encouraged to telephone the undersigned at his convenience should he have any questions regarding this matter or to resolve any remaining issues.

Please charge any fees required by this Amendment to Deposit Account No. 04-1403.

Respectfully submitted,

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Date



LMX-129
REARVIEW MIRROR ASSEMBLY
FOR MOTOR VEHICLES

FIELD BACKGROUND OF THE INVENTION
Description.

The invention concerns a rearview mirror, especially for motor vehicles ~~in accord with the generic concept of Claim 1~~

BACKGROUND OF THE INVENTION

DE 198 40 004 A1 discloses a rearview mirror for motor vehicles, in which the mirror support element is a carrier plate with a honeycomb structure. The mirror housing with the mirror framing, the mirror element with its pane, and the adjustment apparatus ~~is~~ are fastened to ~~this~~ the carrier plate. The carrier plate with the ~~said~~ honeycomb structure is secured to a holder by means of a clamping mechanism and the holder, in turn, is attached to the body of the vehicle. A mirror of this type possesses a high degree of stability, a relatively low weight, and only a small tendency toward vibration.

A comparable mirror arrangement ~~has been made known by~~ EP 0 590 510 A1 and DE 40 10 083, which ~~likewise~~ each exhibit a carrier plate as the carrying element, but ~~in~~ ^{is described in} ~~which no~~ ^{without a} honeycomb structure ~~is to be found~~.

A disadvantage of this type of mirror arrangement ~~is found therein~~ ^{its comparatively heavy weight, as found, for example,} in ~~that~~ the version of EP 0 590 510 A1 ~~possesses a comparatively high weight~~.

SUMMARY AND ADVANTAGES OF THE INVENTION

~~The purpose of the present invention is to~~ ^{structure} improve the ~~known~~ rearview mirror of DE 198 40 004 A1 ~~that it is provided with a lighter structure, but which, at the same time, exhibits necessary stability.~~

~~The achievement of this purpose is accomplished through the features of Claim 1~~

In ~~a manner similar to that of the state of the technology, in the case of the present invention, the rearview mirror is secured to a holder, i.e., a holding tube, by means of a first and a second clamping component. The clamping bracket can be screwed to the mirror housing framing. Another possible fastening means is by riveting.~~

Since the first clamping part is the mirror housing framing and the second clamping part is the clamping bracket itself, ^{on} ~~onto~~ which the mirror element is fastened, a carrier plate may be dispensed with. Removing ^{the conventional} a carrier plate ~~which plate is conventional in the state of the technology~~ leads to a reduction in weight.

Since ~~no~~ ^{the} carrier plate ~~is~~ ^{no longer} required ~~anymore~~ ^{compared to the state of the technology} again in comparison to the state of the technology, the number of the system parts or components is reduced, which results in a simpler mounting procedure and also reduces the costs of manufacture.

In accord with an advantageous embodiment of the present invention ~~as stated in~~ ^{Claim 2} the clamping bracket is made out of a more rugged material than ~~is~~ the mirror housing framing, ^{so that} ~~the said bracket becomes the essential carrying part of the construction. On to the bracket, as the~~ ^{Accordingly,} ~~carrying component~~ ^{becomes an important} the characteristic mirror pane is fastened along with ^a the positioning apparatus. Since ^{into which} ~~for the clamping connection~~ the entire extent of length or width of the mirror housing framing ^{is} ~~stands available~~ the clamping bracket can now be fashioned essentially in a large surface mode, so that it is possible to manufacture the ~~said~~ clamping bracket from a reinforced plastic ^{such as} ~~that is~~ glass fiber reinforced plastic. Alternatively, the clamping bracket can naturally be made of metal ~~(in this connection, see Claim 3)~~.

In accord with a preferred embodiment of the invention, ~~as shown in Claim 4~~ the clamping bracket fits into one side of the mirror framing with slip-in catches, and is screwed into the ~~said~~ mirror framing on the other side. This type of connection reduces the number of screwed connections and simplifies the mounting.

Following another advantageous embodiment of the invention, ~~according to Claim 5~~ the mirror element includes a mirror pane, upon which a glass carrier plate is installed. ^{The} ~~which~~ carrier plate is driven by a motor, preferably electric, for positioning adjustment. The positioning adjustment ^{or apparatus} ~~itself~~, and thereby the entire mirror element, are screwed onto the reinforced clamping bracket, which acts as the carrying element. This, too, contributes to simplifying the mounting.

In accord with yet another advantageous embodiment of the invention, ~~in keeping~~
~~with Claim 6~~ a rimless glass carrier plate is employed, which allows the mirror pane to
 extend slightly beyond the ~~said~~ glass carrier plate and the carrier plate. Thus, the glass
 carrier plate possesses no border or peripherally running rim which encloses the glass pane
 of the mirror. By ~~means of~~ dispensing with the enclosing rim for the glass carrier plate,
 with an outside design of the same dimensioning, optimum use is made of the glass area.

In accord with yet another advantageous embodiment of the invention, ~~as described~~
~~in Claim 7~~ the mirror housing includes a mirror housing cover, which is releasably bound,
 or can be so bound, to the mirror housing framing by means of a snap-in connection.
 Since the mirror housing cover plate fulfills no carrying function, ~~this~~ ^{it} may be
 manufactured ^{with} very thin ^swalled and light in weight. By means of the snap-in connection,
 the ~~said~~ cover plate can be easily disconnected and can also be lacquered in a simple
 manner with colors specified by the customer.

In a further advantageous embodiment of the invention, ~~in accord with Claim 8~~ the
 clamping bracket, and/or the mirror framing in the area, in which the holding part is
 located, engages securements in the form of projections or grooves, ^{in/on} complementary,
 respective grooves or projections on the holding tube. In this way, not only is the ~~said~~
 slip-in clamping connection still available, but ~~also~~ ^{also} a form-fit connection to the holding
 part is ^{also} created.

In accord with yet another embodiment of the invention, ~~following Claim 9~~ the
 clamping bracket possesses an opening. By corresponding arrangement of the ~~said~~ recess,
~~the achievement may be gained, that~~ when the mirror housing cover is removed, the
 adjustment apparatus is accessible through ~~said~~ ^{the} opening. One advantage of this is that
 wiring to the position adjustment apparatus can be run through this ~~said~~ opening.

BRIEF DESCRIPTION OF THE DRAWINGS

Further details, features and advantages of the invention arise from the following
 description of preferred embodiments, with the aid of the drawings. There is shown in:

- Fig. 1 a side view of a first embodiment of the invention, ^{particularly showing}
^{a clamping bracket with}
^{elements shown in phantom}
- Fig. 2 a sectional drawing along the section line A-A of Fig. 1, ~~showing~~

Reference will now be made in detail to the presently preferred embodiments of the invention, examples of which are illustrated in the drawings. The examples are provided by way of explanation of the invention and are not intended as limitations of the invention. For example, features illustrated or described as part of one embodiment can be used on another embodiment to yield yet a third embodiment. Accordingly, it is intended that the present invention include such modifications and variations.

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Fig. 3 a sectional drawing along the section line B-B of Fig. 1,

Fig. 4 a plan view of the mirror housing framing seen from the front,

Fig. 5 a side view of a second embodiment of the invention, and particularly showing the clamping bracket with surrounding elements in phantom

Fig. 6 a ^{sectional} view such as in Fig. 3 of a third embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

The Figs. 1 to 4 show a first embodiment of the invention in various presentations.

Fig. 1 shows a side view, depicting a mirror housing 2, which comprises a mirror housing framing 4 and a mirror housing cover 5. In the mirror housing 2 is placed a mirror element 6. The entire rear view mirror is fastened by means of a clamping connection 8 on a holder tube ¹⁰ 2. The clamping connection 8 comprises a first clamping part in the form of the ~~said~~ mirror housing framing 4 and a second clamping part in the form of a clamping bracket 12.

As may be inferred from the sectional drawings in Fig. 2 and 3, the mirror housing framing 4 possesses a trough-like recess 14 within which the holder tube ¹⁰ 2 is partially encased. The clamping bracket 12 possesses a similar trough-like recess 16. Thus, as a result of the double, opposed trough-like structures 14, 16, the holder tube 10 is nearly completely circumferentially encased, and a large surface is made available for the transmission of forces. Away from the described trough structure 16 of the holding tube, extend, in a comblike fashion, a plurality of hook elements 18. On the other side of the trough structure 16 extends a part 20 of the bracket 12 with provision ⁵ for screw fastenings ²⁴ ~~projections~~. The hook elements 18 fit into a corresponding hook opening 22 in the mirror housing framing 4. As one can see in Figs. 2 and 4, the part 20 of the clamping bracket 12 is connected to the mirror housing framing 4 by means of four screw connections 24.

Fig. 3 shows that the mirror element 6, inclusive of a mirror pane 30, a glass carrier plate 32 and ^{an} electric motor driven mirror positioning apparatus 34, is connected to the clamping bracket 12. In this way, the mirror adjustment apparatus 34 is fastened onto the piece 20 of the clamp bracket 12. ~~In accomplishing this~~ ¹⁰ ~~by~~ accomplishing this, the mirror positioning apparatus 34 is screwed onto the part 20 of the clamping bracket 12 by means of four screw connections 26.

The four screw connections 26, i.e. screws, enter the part 20 of the clamping bracket 12 (in Fig. 3) from the side proximal to the mirror pane 30. The glass carrier plate 32, with its attendant mirror pane 30, is fastened onto the mirror positioning apparatus 34 by means of a detent connection 36. The glass carrier plate 32 is without a surrounding rim construction, as ^{discussed} has been made known in EP 0 659 609 B1, and ^{a periphery of 31 of} the mirror pane 30 extends slightly outward beyond ^{a periphery 32 of the} said glass carrier plate 32. To this extent, ^{is incorporated herein by reference.} acknowledgment is made in completeness to the EP 0 659 609 B1.

Fig. 4 shows a view of the mirror housing framing 4 from the front, without the mirror element 6. The mirror housing framing 4 possesses three openings 38^{a, 38b, 38c} for internal installation purposes and for weight reduction. The somewhat rectangular clamping bracket 12 exhibits in its screwed-on part 20 an opening 40, which overlaps the central opening 38^{b (shown in phantom)} in the mirror housing framing 4. In the remaining upper and lower edge strips 42, 44^{respectively,}, are provided the four screw connections 26²⁴ for the screw connection of the clamping bracket with the mirror housing framing 4. On the upper and the lower edge strips 42, 44^{also}, are respectively the four screw connections 26^{26 and four extensions 48} for the screw connection of the mirror positioning adjustment apparatus 34 to the clamping bracket 12.

When ^{housing 2} the mounting of the mirror takes place, first the clamping bracket 12 is pushed into the snap connections 22 of the mirror housing framing 4. Subsequently, the holding tube 10 is clamped between the clamping bracket 12 and the mirror housing framing 4 and the clamping bracket 12 is ^{OK} screw attached to the mirror housing framing 4 from the back side of the mirror assembly forward [see Fig. 2] by screws 24. Thereafter, from the front position, the mirror positioning apparatus 34 is screwed onto the extensions 48 of the clamping bracket 12 by screw connections 26^{OK}. Following this, the glass carrier plate 32 with the mirror pane 30 is fastened onto the mirror positioning apparatus 34 by means of the detent connections 36. Finally, the mirror housing cover 5 is snapped onto the mirror housing framing 4.

In the case of the embodiment in accord with Figs. 1 - 4, the connections, ^{i.e., more} ~~more~~ closely defined as screw connections, ^{24 and 26} between, first, the mirror housing framing 4 and the clamping bracket 12, and second, ^{and the clamping bracket 12,} the mirror element 6, that is, more exactly the mirror positioning apparatus 34, are made by means of two independent sets of screws, ^{24 and 26, respectively}.

Alternative ⁽¹⁴⁾ to this, but not shown, the mirror positioning apparatus 34, the mirror housing framing 4 and the clamping bracket 12 can also be bound together by a screw connection common to all ^(not shown)

Fig. 5 shows ^{side view of a} a second embodiment of the invention ~~in side view~~ similar to the presentation of Fig. 1. This second embodiment of the invention differs from the first embodiment in that the holding element is not a continuous holding tube, but is rather constructed as a two-piece holding component with a first and a second holding arm 50 and 52. In this case, the first holding arm 50 is secured by the upper edge strip 42 of the clamping bracket 12 and the second holding arm 52 is secured by the lower edge strip 44 of the ~~said~~ clamping bracket 12. Otherwise, the construction of the second embodiment agrees in all details with the first embodiment.

Fig. 6 shows a third embodiment of the invention in a drawing similar to Fig. 3. The third embodiment differs from the first or the second embodiment ~~essentially therein~~ in that the connection between the holding parts 10, 50, 52 and the clamping bracket 12 are not made as auxiliaries to the clamping connection by means of a form-fit binding. In this case, in the trough-like recesses 14 and 16, additional projections 56 are provided which fit into complementary recesses 58 in the holding parts 10, 50 and 52. By this means, the mirror is secured additionally against rotational displacement on the holding elements 10, 50, 52. Additionally or alternatively, ~~(not shown)~~ in the holding parts 10, 50, 52, projections can be provided ^{that} which engage in corresponding recesses in the trough shaped recesses 14 and 16 ^(not shown)

The mirror housing framing 4 and the mirror housing cover 5 are advantageously ^{preferably} made of acrylonitrile butadiene styrene (ABS). The clamping bracket 12 advantageously ^{preferably} is manufactured from glass fiber reinforced plastic, polyamide (PA 6.6) glass fiber (GF 35). ^{For example,} The glass carrier plate 32 is advantageously made of ABS with a 30% portion of glass fiber and possesses a thickness in a range between 1 and 1.5 ^{millimeters} (mm). The wall thickness of the remaining components varies ^{between} within the limits of 2 and 2.5 mm. By means of these measures, weight and cost reductions are achieved. Furthermore, the vibration tendencies are also reduced.

It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope and spirit of the invention. It is intended that the present invention includes such modifications and variations as come within the scope of the appended claims and their equivalents.

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In certain cases, it can also be advantageous to reinforce the trough-shaped recess 14 and the area of the screw connections 24 of the mirror housing framing 4 by means of an inlay of reinforced material ^(not shown) or to make these areas out of glass fiber reinforced plastic.

Reference-number list

- 2 Mirror housing ✓
- 4 Mirror housing framing ✓
- 5 Mirror housing cover ✓
- 6 Mirror element ✓
- 8 Clamping connection ✓
- 10 Mirror holder, i.e. mirror holding tube ✓
- 12 Clamping bracket ✓
- 14 Trough-like recess (in 4) ✓
- 16 Trough-like recess (in 12) ✓
- 18 Hook elements ✓
- 20 Part for screw fastening ✓
- 22 Hook opening ✓
- 24 Screw connection between 12 and 4 ✓
- 26 Screw connection between 12 and 34 ✓
- 30 Mirror pane ✓
- 32 Glass carrier plate ✓
- 34 Mirror position adjustment apparatus ✓
- 36 Detent ✓
- 38 Opening in 4 ✓
- 40 Opening in 12 ✓
- 42 Upper edge strip of 12 ✓
- 44 Lower edge strip of 12 ✓
- 48 Extensions on 42 and 44 ✓
- 50 A first holding arm ✓
- 52 A second holding arm ✓
- 56 Projections in 14, 16 ✓
- 58 Recesses in 10, 50, 52 ✓

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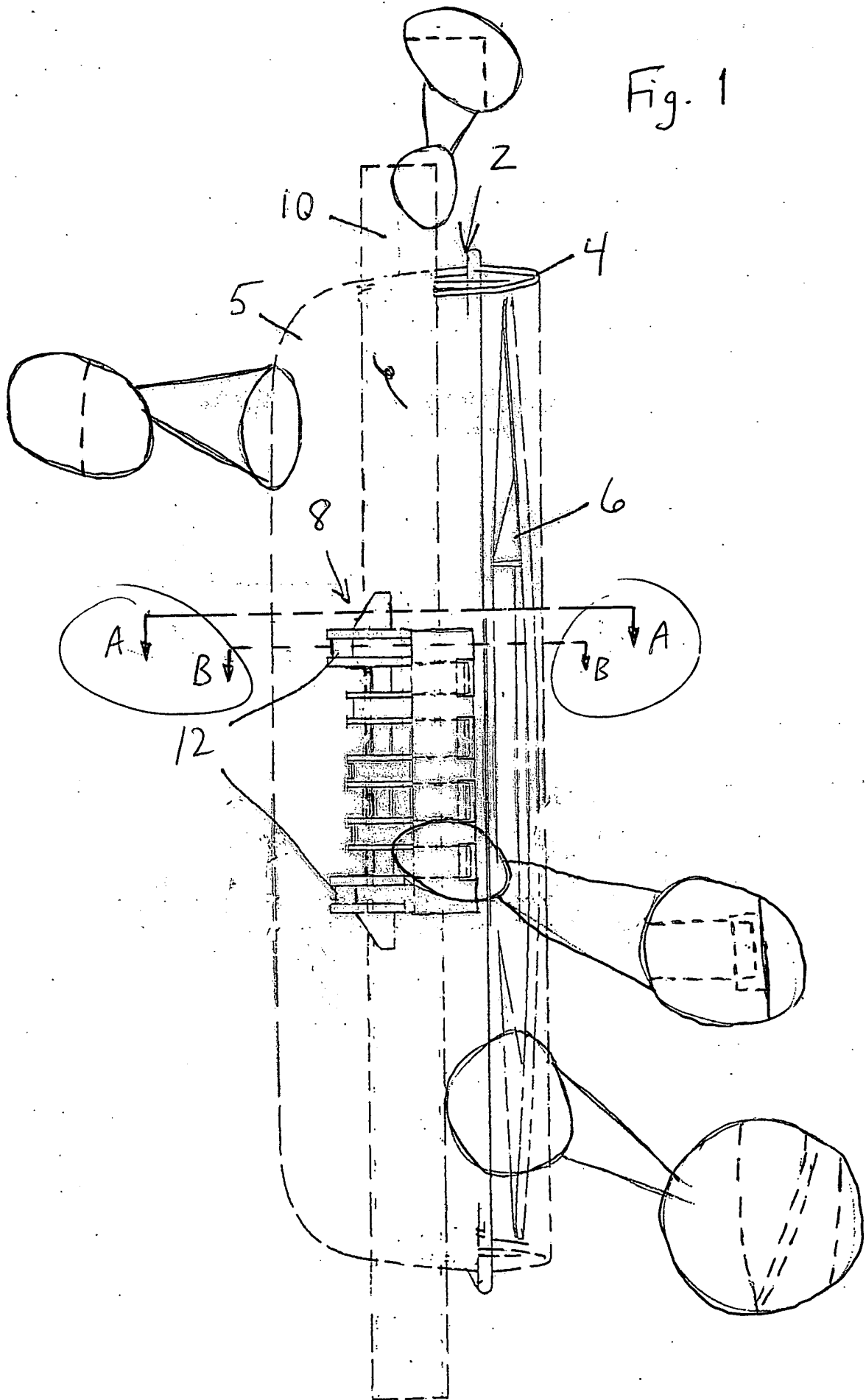


Fig. 1

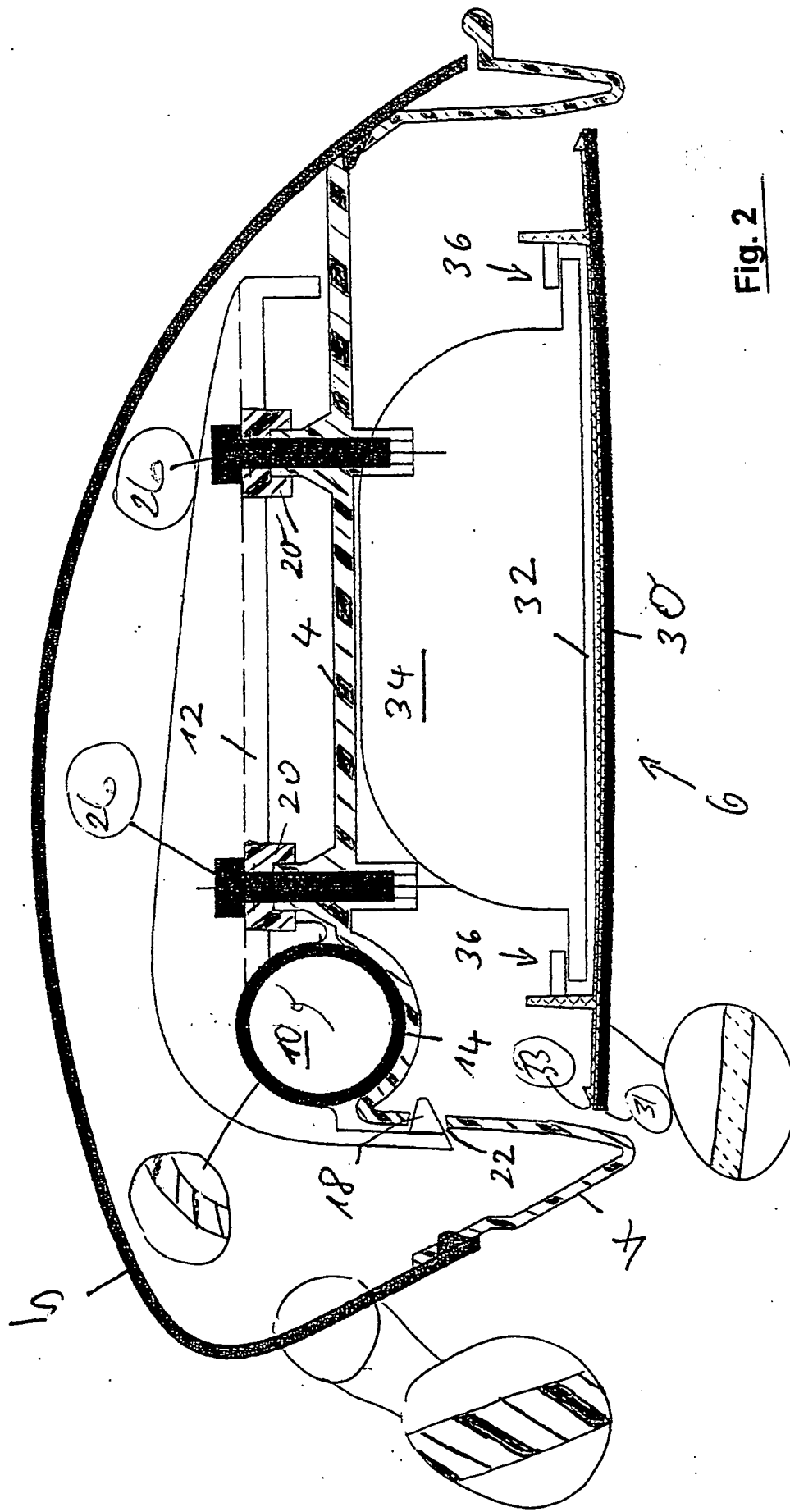
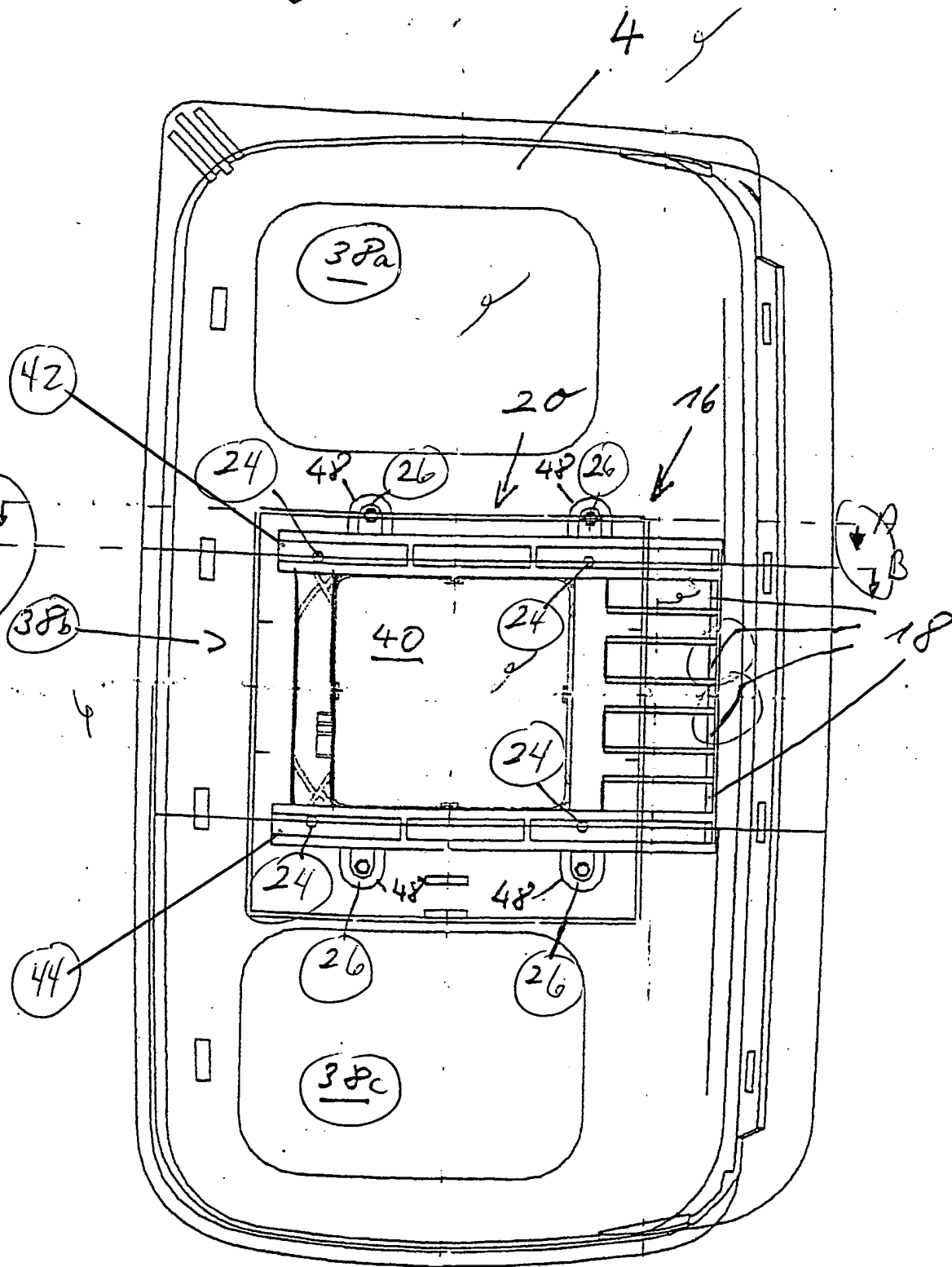


Fig. 2

Fig. 3

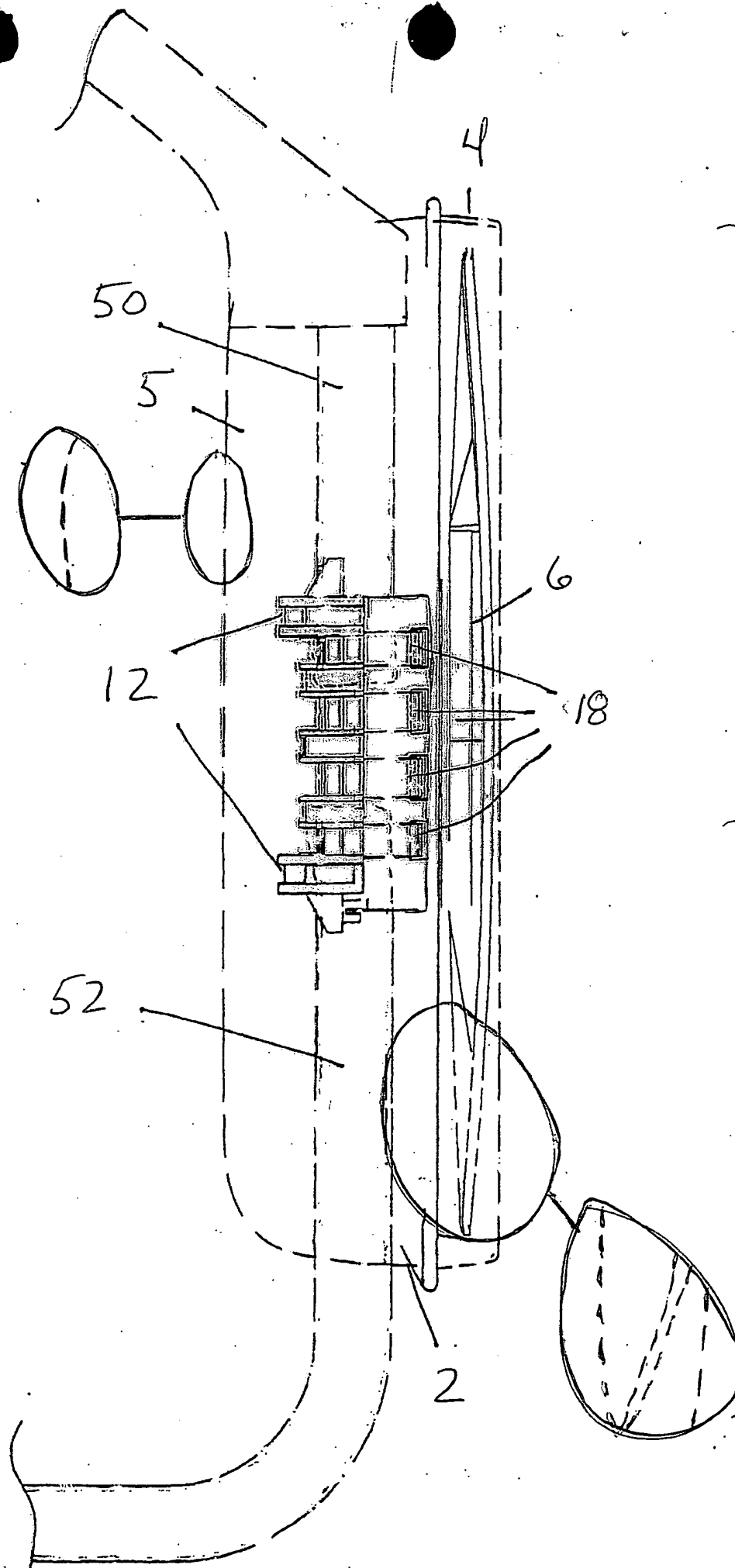
Fig. 4

FIG. 4



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Fig. 5



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